

**Iowa Power Fund Board Meeting  
August 13, 2008  
Full Application Comments**

**Soy Energy LLC– Marcus, IA**

- Overview of Marcus, IA
- 11 Directors of Soy Energy's Board
- Will make biodiesel from corn oil
- Corn oil is available on the front and back end of the ethanol process, front end is food grade, back end is not.
- BEST Energies is technology provider
- Unique in risk management-with contract corn oil
- Iowa Power Fund project would use pellets from the Cherokee Solid Waste Landfill
- 1. Soy would help increase the landfill life by four times
- 2. Reducing carbon emissions
- 3. Reduce dependency on foreign oil
- 10 year contract for \$3.00 per mm/btu
- Soy Energy has met with Region 7 of the EPA and with DNR
- If the pollution from the biodiesel plants is in excess of Region 7 and DNR requirements, Soy will install scrubbers on their boilers.

Q. This project is about purchasing a boiler. Most of the products going into the boiler pellets are recyclable. Is the landfill pulling out the recyclable materials?

A. Yes, the landfill is sorting all the refuse before the pellets are pressed. There would be a substantial decrease in natural gas usage.

Q. Natural gas is much cleaner to burn, how will you remediate?

A. Stanley consultants, DNR, and EPA have all looked at this system, the emissions will be studied, and a scrubber will be added if need be.

Q. Does all the requested \$3.4 million go toward the boiler?

A. Yes.

Q. If a scrubber is needed, will the business still be successful?

A. Yes.

Q. Aren't there other facilities in the state using this process already?

A. The City of Ames is burning garbage, but this pellet is a fuel engineered pellet.

Q. How much cost share is available?

A. Applied for 17.5 million with USDA loan guarantee, application has been submitted, but no results as of yet.

Q. What terms would be acceptable for the distribution of money?

A. Forgivable loan would be acceptable.

Q. Is the boiler only for heat, or can it produce electricity as well?

A. Currently just heat, electricity would add significant cost, there are plans for the business to further diversify down the road.

Q. Is using municipal waste as a heat source innovative for the State? What can the State gain?

A. Using corn oil to make biodiesel is innovative-Soy is using a more efficient process. Soy is burning a pellet that will have an environmental benefit.

Q. If this is not funded, what will be developed?

A. A stand-by boiler.

Q. What is the payback for the loan?

A. There will be less than a 5 year payback.

Q. How easy will replication be?

A. Other companies are looking for emissions data and proving the boiler before the technology will be widely enacted.

Q. Could the syngas be used in the boiler?

A. With slight modification.

Q. How replicable is the pelletizing process?

A. Very replicable.

Q. How long will the life of the landfill be continued?

A. Four times.

Q. If the differential cost was funded by the Power Fund Board, would that still be attractive?

A. Yes, but natural gas boiler is \$600,000. Federal laws and economics have prevented the current implementation.

Q. Was CO2 emissions calculated in profitability?

A. Soy Energy will be a carbon credit producer which can be sold, according to FC Stone.

- There are some environmental concerns about the project; the DNR testing would be to ensure that the project meets the minimum standards of the Clean Air Act.
- Added scrubbers upfront could be a way to model the project.

Vote: Wind-no, Conrad-yes to table (believes this is a proven technology), Bilsten-yes (with a different way to finance-loan/ w interest), Hubbell yes (requiring scrubbers upfront), LaSeur-no (more towards carbon neutrality), Trammontina- yes to table (this is a lot of money for one project-needs to be a smaller amount), Higby-yes.

Abstaining: Leopold

### **Carbon Free Energy Vertical Wind**

- Goal of the project is to develop a product that will reduce carbon emissions and develop a manufacturing facility in small town Iowa.
  - Pre-production run of 40 units
  - Prototypes were developed and tested at the University of Iowa.
  - The company fits in well with the mission of the Iowa Power Fund, and not with the Department of Economic Development
  - This is a 10kw system, should be able to power a typical home
  - Areas of competitive advantage
1. Generator Controller-maintains constant DC voltage

2. DC/AC Inverter- senses line voltage to synch with grid or charge batteries
3. Power Management-optimizes generator output by changing torque on load on generator.

Q. There was a question on patent infringement from the Due Diligence Committee?

A. The competitor did not have a patent, but Carbon Free Energy has filed for a patent on June 22, 2007 for the diversion of air flow.

Q. What's the footprint of the unit?

A. Four foot to six foot.

Q. Is one unit 15kw, or is that a series?

A. Currently the company is using computer modeling to determine how large the blades must be to generate what the amount of energy that is needed.

Q. What is the capacity factor for the turbine?

A. Site, wind conditions, and size of turbine would be a factor.

Q. Are there any avian concerns?

A. All the research from vertical turbine manufacturers says that there is not an issue with birds.

Q. How will the turbine be mounted?

A. The design is 5ft x 5ft x 4ft.; the group is still working to decrease the size of the footing,

Q. Is the company looking to net meter the excess electricity?

A. Yes, depends on the state in which the unit is sold.

Q. What is the money specifically for?

A. The Power Fund dollars are to produce the vertical wind turbines, and to do some more computer modeling.

Q. What is the idea for back up storage?

A. The thought is that there would be a battery bank. It would depend on how much storage the client would want, 1 day, 2 days, etc.

Q. Citing is an important piece of industrial scale unit. Is there any citing work done with individual owners?

A. Citing analysis would be best for each homeowner, but this design of this device would allow for pretty steady wind flow.

Q. Does your technology have the technology to shut down if there is a detrimental weather condition?

A. It is something that they are considering.

- There is pretty good modeling at ISU, and there is a pretty good wind flow throughout Iowa.

Q. Is there a working model?

A. The company is waiting to get a prototype developed, no but it should be developed by the end of October.

Q. These will be sold for \$15,000?

A. Yes, installed.

Q. These will be installed in Iowa, is the market in Iowa?

A. No, there is a national market.

Q. What will happen in Belle Plain?

A. The blades and all component parts will be developed in Belle Plain. The generator will be made in Minnesota.

- This is a DED proposal.

Q. What is the total expenditure?

A. \$1.26 million

Q. What time frame to sell 40?

A. By the end of the year, provided the generator and all unresolved issues will be resolved. Within the next 6 months.

Q. Will cities allow for this technology?

A. The City of Chicago is allowing for the installation of similar devices on rooftops in Chicago.

Q. Is there a power curve?

A. There is off of the blades, but not from the generator.

Q. Is there an idea of what material will be used to make the blades?

A. No, potentially carbon fiber.

Higby-Table (more of full scale prototype), Trammontina-Yes (almost too good to be true), Leopold- Yes (seed is of the essence), LaSuer-Yes, Hubbell-Yes, Bilsten-Yes, Conrad- Yes, Wind- No (does not think it can be competitive in the market place)

### **Green and Main- Indigo Dawn**

- Important to have a model for green building
- With flooding in Eastern Iowa, this is now even more important
- Goals for the project:
  1. 75% more efficient than code
  2. 15% or greater renewable energy supply to the building
  3. looking at natural gas and water reduction
  4. carbon credits will also be reviewed
  5. platinum LEAD certification for renovation is a goal for the project
- Demonstration is crucial to produce market transformation
- Small buildings tend to fall through the incentive cracks
- The site is a infill site that was abandoned, and inefficient

Q. How would the idea be marketed to Iowans?

A. Thought government and nonprofits.

Q. How replicable is the project?

A. There could be a variation of ideas taken from the building design and construction to allow other buildings around Iowa to integrate changes.

Q. Has the applicant received REAP funding from the DNR?

A. The applicant has not heard anything about the loan.

Q. Has the applicant received funding from the State revolving loan program?

A. That grant has not been finalized.

- Funding should be contingent on receiving funding from other sources.

Q. The project costs have increased substantially. Is there a reason for that, and could that be a continuing problem in the future?

A. The project continues to be refined. As environmental information continues to get refined, there are more and more project costs.

Vote: Wind- table, Conrad-no, Bilsten- no, Hubbell-yes (for marketing and education for \$175,000), LaSuer- yes (to money for marketing and education), Leopold-yes, Trammontina- table, Higby-yes

Tabled.

Back to the Board in two months, to see if funding has been flushed out. Staff will be in contact with applicant.

### **Iowa Renewable Energy Association**

- Goals of the organization is:
  1. to increase energy efficiency in the State of Iowa
  2. expose Iowans to renewable energy
  3. display transportation alternatives
- group has been holding events since 1992
- expo is a weekend long event
- seven simultaneous sessions
- exhibitor tents
- green car show
- this years expo will take place September 13 & 14<sup>th</sup> at UNI-CEEE

Q. Is this less of a grant, and more of a sponsorship?

A. Highest level is \$5000.

Q. Was the DVD and distribution in the original budget?

A. No it is something they have never done before.

Vote:

Trammontina-yes, Leopold- Yes, Bilsten-yes, Conrad- yes, Wind- yes, Hubbell-yes

Recusal: Higby, LaSuer

### **TPI**

- TPI seeks to deliver solutions through composites
- TPI is fast becoming mostly a wind company
- Iowa is situated well for the wind industry
- Iowa has manufacturing history
- Installed wind costs are twice what they were just a few years ago
- Addressable market in the United States, could be expanded from Iowa significantly with investment and more efficient production
- Project calls for a 35% gain in productivity

- 35% gain in throughput/ cycle time
- TPI's blades have been in the market 6 or 7 years without significant problems
- Request is \$2.1 million over 3 years from the Power Fund to match \$4.2 million per year over 3 years
- Benefit will come through collaboration building with Federal Government, industry, State of Iowa, and regent institutions.

Q. Other companies will do the research and innovation, which would help promote the development of the whole US wind industry as a whole?

A. Yes

Q. How big is the company?

A. 1500 employees going to 300. Seven years ago TPI was an \$8 million company.

- Project adds intellectual capital to the State, as TPI and DOE works with Iowa State; this will help add intellectually property to the State.
- Top line revenue growth has doubled the last couple of years
- TPI's partnership with General Electric is significant, and should be held in high regard.
- There is a center at Iowa State University for NDS (Non Disruptive State)

Q. Would a loan be acceptable?

A. Current match assumes that the money is grant.

Q. Would the process and technology enhancements all be implemented in Newton?

A. Yes it would be.

Q. How does this project benefit Iowa State?

A. This project would help develop the capacity that already exists as Iowa State builds capacity to help the Iowa wind industry.

Unanimous Yes

### **Prairilands LC**

- Goal to provide an alternative heating source for Iowans
- Project based in Appanoose County, IA
- Available and abundant product
- There is a great opportunity to plant switchgrass on marginal land in Southern, IA
- Biomass improves water quality and wildlife sustainability
- Idea is to start with one plant in Centerville, IA pelletizing biomass
- Sell franchises in IA so farmers would not need to transport materials more than 60 miles

Q. What are the project numbers?

A. The applicant is asking for \$500,000, total project cost is \$1 million

Q. How many jobs would be created?

A. 20,000 tones per year would employ about 15 people, 24 hours a day, 3 shifts

Q. How would the storage work?

A. The company would store on-farm and on-sight.

Q. When pellets are purchased to heat homes, where are the pellets stored?

A. Usually the pellets are stored someplace on the stove.

Q. How much are home heating units?

A. A 1000btu home heating furnace would cost \$3000- \$5000 plus installation. For a room unit the cost is \$1000 +/-.

Q. Do the furnaces require air permits?

A. The larger furnaces do.

Q. Why will a farmer plant switchgrass with \$5-\$8 corn?

A. Southern Iowa that has many pasture acres that could plant biomass, not as much land is dedicated to row crops as in other parts of Iowa.

Q. How many acres would be needed to support the business in Appanoose?

A. About 5000. The company has about 2000 now, but there could be more that are available.

Q. If no money is spent on marketing how will people know about the idea?

A. Website that would be set up by a friend of a friend.

Q. Why isn't marketing allocated for in the budget?

A. Because everything is contingent on producing pellets.

Q. Could the applicant address the bankruptcy on the application?

A. It happened to one of the companies business partners, who owned a dairy farm in the mid 80's that declared bankruptcy

Vote Wind=yes, Trammontina-table, Higby-table, Leopold- table (stronger business plan), LaSuer-table (needs a complete business plan), Hubbell- table (with market evaluation from DED, is the project a viable business approach), Bilsten-table, Conrad-table